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THE NATURAL HISTORY OF SPONGES.

SINCE time-out of-mind, pharmacists have been more or less familiar with the facts connected with the derivation, collection, preparation, and uses of sponges, but there has been no recent publication, of which we are aware, describing the structure of these curious organisms, which would especially interest this class of readers. It is only during late years that the sponges have been carefully studied, or that there has been any very clear understanding of their origin and phenomena. Indeed, it was for some time an unsettled question as to whether they were to be considered as animal or vegetable in their nature; but the facilities afforded by aquaria, and the labor of zoölogists, have permitted the decision of the question quite definitely in favor of the former. As it is, they constitute one of the simplest forms of animal existence, and have so little of what characterizes that which is commonly attributed to animal beings, that it is hardly to be wondered at that doubt as to their nature should have so long existed.

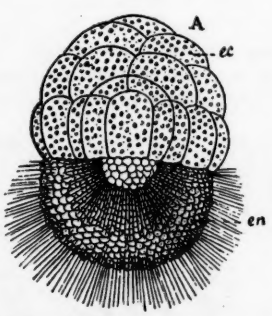
A work published a few years since by J. L. de Lanessan, upon natural history from a medical standpoint, has a chapter devoted to this subject which gives the leading features manifested by sponges in the course of their development, and which, in the translated abstract which we give below, will prove interesting as well as instructive to most of our readers.

As an illustration of the benefits derived from researches such as furnish the data for a paper like this, we will mention the recent successful efforts to propagate sponges artificially, and so to promote their development in favorable localities for commercial purposes.

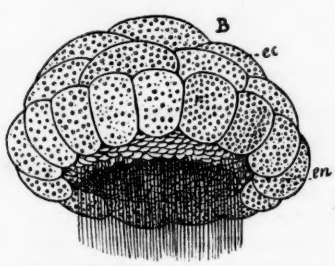
The sponges sold by druggists and others comprise but a limited variety of those which are known. Marine sponges are most numerous about the tropics, where they grow in comparatively shallow and warm water; but there are others which inhabit the deep ocean, and some of the latter are most curious and beautiful in their structure. The cornucopia-shaped sponges, with a silicious skeleton largely developed in proportion to the organic matter, so that they resemble a fine lacework of glass threads, are among the most curious and beautiful, and are so delicate and intricate as to make their representation by an engraver most difficult. Such sponges are sometimes found after storms in the ocean about Japan, and seen in museums under the name of Venus flower-basket (genus *Euplectella*).

We will study as a type of sponges the *Sycandra Raphanus*, a small and very simple calcareous sponge, of which the development has been followed with much care during recent years by several zoölogists.

The ovum of the *Sycandra Raphanus* is a single cloudy amœboid, which moves about in the substance of the body of the mother. After fecundation the ovum contracts, becomes spherical; it then divides into two, three, four, etc., equal cells in a manner to form the resulting mulberry-like body, by collection of liquid in the centre of the cellular mass—a spherical blastule, of which the cells are different. Those of the upper portion of the sphere are about thirty-two in number, rounded, with granular protoplasm; those of the lower portion are more numerous, are arranged radially, are cylindrical and clearer.



Free embryo of *Sycandra Raphanus* (Schultze): *ec*, ectoderm; *en*, endoderm.



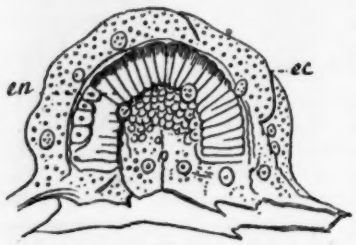
Embryo of *Sycandra Raphanus*. The endoderm, *en*, invaginated in the ectoderm, *ec* (Schultze).

While the embryo is still within the tissues of the mother, the lower portions are partially invaginated in the other; but this phenomenon is only temporary, and after the embryo has become liberated and enters the water through the separation of the maternal tissues, it becomes spherical and the segmentation cavity is very apparent. It enlarges, owing to the granular cells becoming externally more prominent. The larva thus becomes ovoid and presents two quite distinct portions: one composed of clear, cylindrical cells which acquire vibrating cilia; the other formed by the large granular cells, which remain unprovided with cilia. Among the latter may be distinguished fifteen or sixteen, most voluminous, forming an equatorial zone adjoining the ciliated cells.

The larva lives at first free for some time, then the ciliated hemisphere becomes finally invaginated in the other, and of this the equatorial zone of large cells form the margin of the prostomium. After the invagination the larva has become a *gastrula* with a blastoderm of two layers: the exterior, or ectoderm, represented by the hemisphere of granular cells; the other, or internal, endoderm, formed by the invaginated and ciliated en-

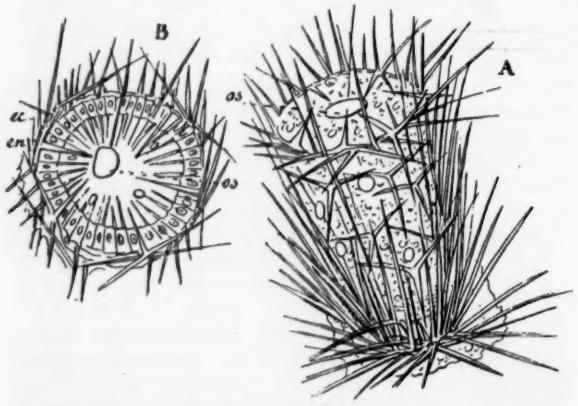
doderm. The larva now hastens to affix itself upon some rock or other foreign body by the margin of its prostomium, which is considerably narrowed.

At the time of fixation the equatorial cells become amœboid and spread upon the foreign substance. The primitive mouth is thus closed, and the endodermic cells which line the cavity (now closed) loose their cilia, while the cells of the ectoderm become amœboid to the degree that it is no longer possible to distinguish their contour. Commingled thus, one with the other, they constitute what Haeckel calls a *synchytium*, which is very transparent and permits the observation of all that goes on in the cavity of the gastrula. Between the cells of the ectoderm and those of the endoderm is now developed a hyaline layer, amorphous in appearance, developed, no doubt, from the endodermic cells and representing the mesoderm. In this layer are rapidly formed little, straight, spindle-shaped, calcareous needles known as spiculas.



Fixed gastrula of *Sycandra Raphanus*.

Meanwhile the larva grows and assumes a cylindrical form, fixed by one extremity, the other free. Its surface presents numerous projecting spiculas, excepting the upper surface, which is bare. Shortly it acquires at the centre of this face, by absorption of cells, an orifice communicating with the cavity, which becomes a permanent mouth, or ossicle, and is known as the exhaling

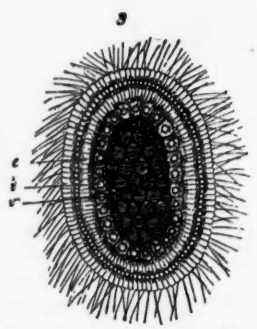


Two young specimens of *Sycandra Raphanus*: *os*, mouths (*oscules*); *ec*, ectoderm; *en*, endoderm (Schultze).

orifice. At the same time, upon the sides, a large number of smaller orifices are formed by which the water enters the cavity to pass out by the mouth, and which are known as the inhaling orifices. The cells of the endoderm lining the cavity become the proper intestine, and are covered with vibrating cilia which serve to direct the water from the inhaling orifices toward the exhaling orifice. The sponge is now completely formed.

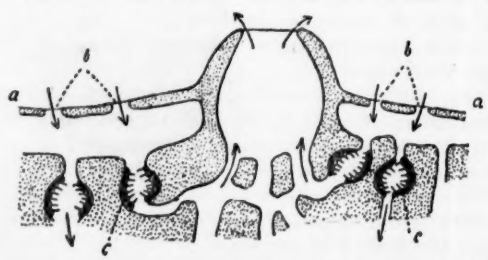
Now, knowing the development of the organism of the *Sycandra Raphanus*, it is easy to understand the structure of the more complex sponges. A bud, in the shape of a cul-de-sac, having developed upon the side of this simple sponge, enlarges in the direction of its length so as to form a cavity resembling that of the one which has given it birth. The cells which line this cavity are furnished with vibrating cilia, while the narrow canal connecting it with the cavity of the original is unprovided with cilia. The summit of the bud becomes opened outwardly in the same way as we have already seen in the case of the young *Sycandra*, and we thus have a new being, resembling the first, attached to its side, communicating with it, and provided, like it, with a mouth and with inhaling pores. This second may in turn, by budding, give birth to a third like the first two, etc. If this budding takes place at several points upon the periphery of the first individual, then a second, third, etc., we will soon have a numerous colony of sponges, of which each represents a distinct individual, formed by budding from a pre-existing one. The surface of the colony will now present as many mouths, or ossicles, as there are individual sponges entering into its composition; but later it will not be thus, because the accumulation of individuals is such that a larger number of primitive mouths become curved by the bodies of the individuals newly formed. A large number of mouths, instead of opening directly upon the surface, open into the canals which connect one individual with the others. The small number of mouths which open upon the surface acquire larger size to permit the discharge of the enormous quantity of water which enters the pores and traverses the canals and ciliated cavities of the sponge, to be ejected above.

Ascetta primordialis: Calcareous sponge. *Asconide entière* Semple (Haeckel).



Embryo of *Ascetta primordialis* (Haeckel).

Arrived at this stage, the sponge, or rather the colony of sponges, presents a mass of very variable shape attached to a foreign body and covering a greater or lesser extent of its surface, and formed of a basic substance of amorphous appearance, perforated with connecting canals in every direction, and which connect



Diagrammatic section of a sponge (Huxley): *a*, external covering; *b*, inhaling orifices; *c*, baskets; at the top a mouth or exhaling orifice.

the elliptical cavities with each other, which are large, lined with ciliated cells, and called ventricles, or baskets. In the amorphous substance, which is a true synchytium, is to be found a framework of spiculas or interlaced

fibres, and upon the surface are seen a small number of exhaling mouths and a large number of inhaling pores. The amorphous substance represents the ectoderm and mesoderm, ordinarily confounded the one for the other; the ciliated cells lining the ventricles are a product of the endoderm, while the flat cells without cilia lining the canals are considered to be of epidermic origin. Thus we see that nothing is easier than understanding the formation of a complex or polozoic sponge (one formed of several individuals) when one is familiar with that of a simple or monozoic sponge (formed of a single individual).

Let us now study a type of sponge much more complex —the *Spongilla fluviatilis*. This sponge exists in abundance in brooks and rivers, attached to bits of floating wood, stakes, etc. The fresh-water sponge has sometimes the form of small cylindrical, conical, or finger-shaped masses; sometimes the form of plates of various extent and thickness. They are colored green by the presence of chlorophyll. Their consistence is soft or spongy, and their surface, always irregular, is covered with little conical nipples, at the summit of which is found a little orifice which opens, not directly into a ventricle, but into a canal. Through the exhaling mouths the water flows continuously; and a constant and abundant supply of fresh water is essential to its existence. Under this condition it can be studied *in situ*. The entire surface of the little sponge is covered with a kind of membrane, pierced by numerous inhaling pores which open into large cavities situated directly beneath this layer. Into these cavities open, also, innumerable canals which lead to the ventricles or vibratile baskets. In the amorphous substance of the organism are scattered threads or bands of a hard, flexible substance called keratose, and silicious, needle-shaped spiculas pointed at both ends and traversed by a capillary tube filled with organic matter.

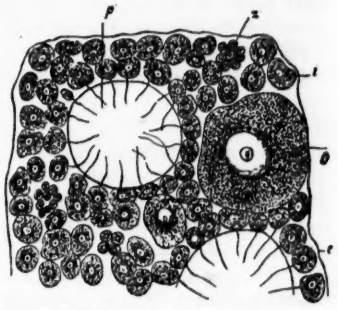
a, entire bud of a fresh-water sponge; *b*, section; *h*, hilum; *c*, an amphidisc (Huxley).

When these sponges come into contact they commonly unite at the point where they touch. On the contrary, if one of them is divided into two or more parts each one continues an independent existence.

The nutrition of the fresh-water sponge, like that of all sponges, is effected partly by the external surface, partly by penetration of nutritive matter directly into the structure, and partly by the canals and ventricles. It is essentially, as in protozoas, by diffusion. Respiration is equally direct, but seems to be most active in the neighborhood of the ciliated cells.

The reproduction of fresh-water sponges has been well studied, and is effected by two distinct processes; that is to say, by a sexual budding and by fecundated ova. The buds are formed as follows: At certain points in the body the cells of the synchytium become granular and rounded; their outlines, heretofore indistinct, become more defined. The cells thus modified form a small, spherical agglomeration. The cells composing the outer layer secrete an envelope of keratose which, in time, encloses the entire mass, except at one point where an opening remains which has been called the hilum. In each of the cells of the keratose layer is then produced a spicula called an amphidisc, formed of two stars with several rays united by a silicious bar. The protoplasm of the cells disappears, while the granular cells of the centre of the sphere maintain their vitality, and the bud, being now formed, remains in a state of repose during the winter. On the advent of warm weather the granular cells escape by the hilum and proceed to develop into new sponges.

These fresh-water sponges are hermaphrodite, containing at once ova and spermatozoa; but these two varieties of cells have not the same origin. It is generally acknowledged that in all sponges the spermatozoa are produced from modified cells of the endoderm, while the ova are derived from cells of the ectoderm. The ovum consists of a single cell possessing the remarkable characteristic of being amœboid and of moving about in the substance of the synchytium. The spermatozoa are born in great numbers from the same mother-cell, and consist of a very small club-shaped body with a single vibrating cilium. Fecundation occurs in the substance of the synchytium where the ova are developed.



Portion of the wall of *Ascetta primordialis*: *i*, endodermic cells; *e*, endodermic *synchytium*; *g*, ovum; *z*, spermatozoa; *p*, ciliary pore (Haeckel).

The ovum of the fresh-water sponge undergoes a complete and uniform segmentation, producing a mulberry-like body without an interior cavity. The exterior cells increase in number rapidly, becoming smaller than the darker interior cells, which, with less rapid growth, remain larger. These large cells constitute the endoderm, while the smaller external ones form the ectoderm. Then some of the interior cells being absorbed form a cavity in the centre of the mass, which cavity Ganin considers as a primitive intestine. This gastrula is formed neither by invagination nor by lamination, but by absorption of some of the endodermic cells. According to Mr. Ganin, this primitive intestine never has an exterior opening. When formed the larva or *planogastrula* is ovoid and regular in form, with a single layer of small ectodermic cells and two or more concentric layers of endodermic cells enclosing a cavity. Later the layer of the endodermic cells lining this cavity becomes the final endoderm, while the remaining layers constitute the mesoderm; and in the latter, filled with yellow granules, are developed the spiculas. Between the mesoderm and ectoderm exists an open interval, called by Mr. Ganin the perivisceral cavity. The cells of the mesoderm at the back part of the larva multiply rapidly, the cavity of the primitive intestine becomes narrowed and pushed forward. The larva becomes attached to some foreign object by means of the ectodermic cells of the posterior extremity, and it undergoes a change of form to that of a flattened disc. About the primitive stomach cavity there commence to form numerous tubes, like appendices, and lined with endodermic cells. During the formation of these tubes one observes at the anterior extremity that a certain number of the cells of the endoderm and meso-

Sycon ciliatum. A calcareous Syconide sponge. (Schmarda.)

derm are absorbed in such a way as to produce an orifice connecting the stomach cavity with the perivisceral space, and forming what Ganin considers as a mouth of the sponge, with this remarkable characteristic, that it does not communicate with the exterior, but only with the cavity located between the mesoderm and ectoderm. Still later, however, the perivisceral cavity communicates, by absorption of ectodermic cells, with the exterior, forming inhaling and exhaling orifices.

General Characters and Divisions of Sponges.—Following what has been said, sponges may be defined as very simple organisms, living isolated, or more often in colonies; deprived of an anus; with walls furnished with inhaling pores and exhaling mouths, which, following the development of the *Sycandra Raphanus*, one cannot fail to consider as true mouths; with a body composed of an amœboid mass, perforated with canals and vibratile cavities, and commonly supported by a skeleton of calcareous or silicious fibres or spiculas. They are divisible as follows:

SPONGES. Gastric cavity without anus, perforated with numerous pores or inhalant canals.

- *Myxosponges.*—Without skeleton (*Halisarca*).
- *Calcisponges.*—Skeleton formed of calcareous spiculas, and subdivided into:
  - *Asconides:* Thin walls. Short canals without ramifications.
  - *Syconides:* Thick walls. Long canals without ramifications.
  - *Leuconides:* Thick walls. Canals very long and ramifying.
- *Silicosponges.* — Skeleton formed of silicious spiculas. Perforators of the shells of mollusks (*Clionides*).
- *Fibrosponges.*—Skeleton formed of threads of keratose interlaced with silicious spiculas, more or less abundant.

The fibrous sponges, last named, are the only ones employed for medical or industrial purposes, and comprise several species.

Note on Aconitine.

THE following is an abstract of a paper containing the results of investigations by the late Edwin Richards, completed by F. Ashley Rogers. The former had completed the work and had written part of the paper before his death. It was completed by Mr. Rogers and published in abstract by the *Chemist and Druggist*. We give only that portion which deals with the preparation of aconitine.

In this paper, unless otherwise stated, by aconitine is meant *crystalline aconitine*, obtained by the improved process from the root of *Aconitum Napellus*, which we believe to be the best source of aconitine, and the crystalline to be the only pure form of the alkaloid.

In the first step, crushed Napellus aconite root is to be macerated in the cold in washed fusel oil for three or four days, with frequent stirring. [We should certainly recommend to employ finely powdered aconite root, to pack it in a percolator, to pour washed fusel oil on it until it is permeated, and then to let it macerate for a few days, after which percolation may proceed.—ED. AM. DRUGG.] Percolate and wash out the alkaloid with very dilute acid (sulphuric acid 2 fluidrachms to the gallon of water) in small quantities at a time. This liquid should be acid to test paper. Test the liquid from time to time until all the alkaloid is extracted. In the second step, shake the liquid with washed methylated ether [in this country with "washed ether."—ED. AM. DR.] sp. gr. 0.730, two or three times, to get rid of fusel oil, and then gently warm the liquor on a water bath for a few hours to dissipate the remaining ether. In the third stage, precipitate the alkaloid, when the liquor is quite cold, with solution of carbonate of sodium. The precipitate, which is nearly white, should be strained on a cloth and pressed between chalk stones, then transferred to bibulous paper and exposed to the air to dry.

Fourthly, when dry, transfer it to a flask fitted with a long tube, and boil it some time with washed and dried ether; then filter into a basin, when nearly the whole of the alkaloid will crystallize out. A ring of uncrystallized gummy matter forms above the crystals, which can be dissolved out with a little pure cold ether, in which it is very soluble, while the crystals are not. Transfer the crystals while damp to bibulous paper to dry spontaneously.

For the above portion of our process we are indebted to the late Mr. John Williams, an improvement on his first published process for the preparation of crystalline aconitine, and his death alone prevented the world from hearing of it from himself. This process produces fairly easily a very fine crystalline aconitine. Two years ago we advanced the opinion that the crystalline aconitine thus prepared was of the highest purity, and hence possessed the greatest toxic properties.

Further work in this direction, although verifying the first part of this statement, has led us to modify the statement as to toxicity, for we find that by converting this aconitine into the nitrate, and subsequent recovery of the alkaloid by the process first published by Dr. Alder Wright and detailed in Mr. Williams' paper published in the *Year Book of Pharmacy* for 1886, page 431, the result is that a crystalline product is obtained physically resembling its original, but possessing far greater toxic properties.

To the process as detailed under the four divisions must therefore be added a fifth division, which, as Dr. Wright's process for the conversion of aconitine into nitrate and recovery therefrom, is well known in the pharmaceutical world. This, then, is our improved process, and it only requires of the operator considerable practice, chiefly in its fifth stage, to obtain readily what we hold to be the most potent aconitine discovered.

It will be recollected that, as a result of the first work on this subject, we discountenanced the genuineness of aconitine recovered from the nitrate, on account of the difficulty which we had in reproducing the alkaloid in its characteristic crystalline form—a difficulty which Williams found insuperable; but we have now succeeded by much practice, which was not available to him, in obtaining the characteristic crystalline aconitine fairly readily from the nitrate.

The justification for our process is to be found, we believe, in the future examination of the product in comparison with that of any other, which we will now give toxicologically and chemically.

The relative toxicity of several aconitines and their salts was kindly ascertained for us by a medical friend who is a lecturer on physiology at a well-known university college. We supplied him with the following solutions, each of the strength of 1 in 2,000 of the alkaloid in a mixture of nearly equal parts of alcohol and water, the alkaloid being very sparingly soluble in water:

Solution A.—Aconitine previous to conversion into nitrate and recovery therefrom.
Solution B.—Amorphous commercial aconitine.
Solution C.—Nitrate of aconitine.
Solution D.—Aconitine recovered from the nitrate.
Solution E.—Jap-aconitine (from Japanese aconite root).

One Mgm. per kilo body-weight was injected under the skin of the back of a rabbit, with results as follows:
Solution A.—Death occurred in fifty-six minutes.
Solution B.—No apparent effect was produced, and although another injection was tried after an interval of eleven hours, the animal remained unaffected.
Solution C.—Death occurred in twelve minutes.
Solution D.—Death occurred in nine minutes.
Solution E.—Death occurred in seventy-five minutes.

Thus, contrary to our expectations, the aconitine recovered from the nitrate—or, as we prefer to call it, *beta-aconitine*—appears to be an exceedingly potent preparation, and the most potent alkaloid obtainable from *Aconitine Napellus*, or probably from any other aconite. The nitrate of aconitine is, it will be seen, almost as

powerful as the alkaloid recovered from the salt. This would suggest that a constitutional change in the alkaloid is effected by means of nitric acid.

The apparent inertness of the amorphous preparation is a strong argument, if any be still needed, in favor of the official recognition of the crystalline alkaloid exclusively. Commercial aconitine is well known to be an exceedingly indefinite preparation. We have ourselves found samples varying enormously in activity; and although we have not before met with a specimen so inert as that mentioned, still we were not much surprised at the results obtained with solution B.

Solution A.—The action of this solution of nap-aconitine is decidedly contrary to the somewhat prevalent notion that this alkaloid is not so potent as the jap-aconitine. It should be observed that the jap-aconitine solution used was the alkaloid previous to conversion into nitrate and recovery therefrom.

We have not yet had the opportunity of preparing a solution of recovered jap-aconitine for comparison with the action of solution D.

IN a subsequent issue of the same periodical the authors continue their observations as follows:

MELTING POINT.

This was given as 183° to 184° C. (uncorrected). The authors have, however, found that aconitine, before being converted into nitrate, had a melting point of 182°–184°, while, after it had been recovered from the nitrate, its melting point was 178° to 180° C. They assume, therefore, for the present the existence of two isomeric forms of aconitine, calling the higher melting one the alpha, and the lower melting one the beta, variety.

The Composition of Aconitine.—This was determined by the authors to be $C_{33}H_{43}NO_{12}$.

In the following we quote the authors directly :

ISOMERIC FORMS.

From the results enumerated we are inclined to the opinion that there are probably two modifications of crystalline aconitine, which we call "alpha" and "beta." As we are not aware that this idea has been previously advanced, we think further investigation will elucidate the point. We have designated that obtained direct from the root as alpha-aconitine, and that recovered from the nitrate as beta-aconitine. We here summarize the results which have led us to form this opinion:

1. Both aconitines are obtainable in crystals of the same form and size.
2. Both possess the same chemical formula.
3. Melting point of alpha-aconitine, 182°–184° C. (uncorrected).
4. The toxicity of alpha-aconitine is only one-sixth of that of beta-aconitine.

ESTIMATION OF THE YIELD.

We have estimated the yield of the aconites used by us as under, these yields representing in all cases alpha-aconitine. We have not yet estimated the yield of beta-aconitine obtainable from the alpha-alkaloid:

Japanese aconite root (dry), about 40 grains from 1 pound of root, or 0.57 per cent.

Aconitum Napellus (dry), about 10 grains from 1 pound of root, or 0.14 per cent,

Aconitum Napellus (fresh), supplied by Mr. Ransom, about 50 grains from 1 pound of root, or 0.71 per cent. Fresh root (wild), supplied by Dr. Heath, gave us the same yield as did fresh roots supplied by Prof. Baker from Kew, and by Mr. Davies from the garden of the Society of Apothecaries, Chelsea; but the crystals came out much more readily from the wild than from any other aconite.

From the above results we are led to believe that the fresh root of *Aconitum Napellus* yields most abundantly the most potent aconite obtainable. We may say that all our fresh roots were collected in the spring before the flower buds were formed, and we are of the opinion that this is the proper time for the collection of the root; but, as we have not yet seen any results given of aconitine from aconite collected at any other period of the year, the point is still an open one.

The question arises as to how *Aconitum Napellus* is to be distinguished in the early spring from other aconites likely to be found growing with it. As mentioned by Mr. Holmes in a paper read before the British Pharmaceutical Conference in 1888, the leaves of *Aconitum Napellus*, which appear very early, form, when the stem is about six or eight inches high, a dense tuft, the segments of the leaves spreading and drooping at the ends. But in the aconites likely to be found with *A. Napellus*—*A. variegatum*, *A. paniculatum*, etc.—the leaves, when young, are rigid, and the segments are close together and in one plane, and do not form a tuft. The wild plant appears to have the best root, if only on account of the ease with which it gives up its aconitine; but doubtless the wild plant's environments could be imitated, and a uniform root, yielding a uniform alkaloid, would give existing preparations a fairer trial than they have yet had.

New Proximate Principles from Javanese Medicinal Plants.

M. GRESHOFF, who has charge of a pharmacological and chemical laboratory established by the government of Netherlands-India at Buitenzorg (Java) for the purpose of making systematic investigations of the native useful plants, has recently published a new instalment of the results obtained by him, both in extenso and in abstract. From the latter (contained in the *Berichte*, xxiii., p. 3537) we select the more important portions.

1. *Carpaine*, an alkaloid contained in the leaves of *Carica Papaya* L. This had been entirely overlooked heretofore. It can be obtained by various methods. Young leaves contain about 0.25 per cent of it. The milk sap, bark, seeds, and root of the papaw tree contain only traces of it. It is a strong base, forming salts with acids. The hydrochlorate, containing 82 per cent of the alkaloid, is being tested physiologically.

Carpaine is soluble in alcohol, chloroform, and ether (in the latter readily so while freshly precipitated, less so after it has crystallized). A solution of the alkaloid in 100,000 parts of water still possesses a bitter taste. It is poisonous only in large doses.

2. *Derrid*, a non-nitrogenized resinous principle (not a glucoside), obtained from *Derris* (*Pongamia*) *elliptica* Benth.

The plant is used upon Java by fishermen for stupefying fish. It appears also to be a constituent of the arrow poison (siren) used upon Borneo. It has an extraordinarily powerful action upon fish. A decoction of 1 part of the root in 300,000 parts of water is still poisonous.

Derrid is soluble in alcohol, ether, chloroform, very little in water or potassa solution. Its alcoholic solution has a feebly acid reaction, a sharp aromatic taste, and produces upon the tongue an imperfect numbness, which lasts, however, for hours.

Derrid is localized in the bark of the root, the yield being 2.5 to 3 per cent of the weight of the root.

The effect of derrid upon fish is most energetic. Even large fish die almost instantly when brought into water containing only 1 part of derrid in 5,000,000.

3. *Pachyrizid*, a body resembling *derrid*, extracted from *Pachyrhizus angulatus* Rich.

This plant has a bad reputation among the natives. A decoction of 1 part of the seeds in 125,000 acts as a rapid poison to small animals. Pachyrhizid is more readily prepared in a pure state than derrid, and appears to be identical with the latter; but this requires confirmation.

4. *Alkaloid from Sophora tomentosa* L.

This plant was once in great repute for its medicinal properties. It contains a poisonous alkaloid—chiefly residing in the bitter seeds—which has not yet been sufficiently studied.

5. *Alkaloid from Erythrina* (*Stenotropis*) *Broteroï* Hassk.

The bark of this contains considerable alkaloid which is a powerful, paralyzing poison.

6. *Alkaloid from Acacia tenerrima* Jungh.

This is the first alkaloid discovered in any species of Acacia. It is extracted from the bark, amorphous, bitter, and poisonous.

7. *Cathartic Acid* and *Saponin.*—The former exists in

the leaves of *Albizzia Saponaria* Bl., and the latter abundantly in the seeds and bark of the same tree.

8. *Alkaloids* were also discovered in the following:

Crotalaria retusa L. and *C. striata* L. The alkaloid is quite poisonous, which is in harmony with other alkaloids derived from allied plants (Cystisus, Ulex, Spartium, Lupinus);

Pithecolobium, var. spec.;

Melodinus lævigatus Bl.;

Leuconotis eugenifolia Dec.;

Rauwolfia, var. spec.;

Hunteria Roxb.;

Pseudochrosia Bl.; and in numerous others, here omitted.

9. *Active Principles of Cerbera Odallam* Hamilt.

Every part of Cerbera—milk sap, leaves, and bark—is toxicologically inert, with the sole exception of the *kernel of the seed.*

The latter contains (besides a non-poisonous fatty oil) cerberin, a cardiac poison, much resembling tanghinine (from *Tanghinia venenifera* Poir of Madagascar). Cerberin contains no nitrogen, crystallizes well, is almost insoluble in water, easily soluble in alcohol, chloroform, and ether. It has a sharp, burning taste and is very poisonous. The author has discovered another poisonous principle, which is very bitter, easily soluble in water but not in chloroform, which he named odollin [should be odallin].

10. *Laurotetanine.*

This name is given by the author to an alkaloid existing in various members of the order Lauraceæ in Java.

It is best extracted by Stas' process, chloroform being the best solvent. Caustic soda or potassa cannot be used for isolating it, as it is soluble in an excess of the alkalies. Sodium carbonate must be used.

Laurotetanine is a poison producing tetanus, like strychnine, though a little more feeble.

11. *Hydrocyanic Acid* as a plant constituent.

The author has examined a number of plants with a view to determine whether they contained hydrocyanic acid or substances capable of producing the latter.

He found that a plant belonging to the Asclepiadaceæ, viz., *Gymnema iatifolium* Wall, contained a large amount of amygdalin, but not a trace of emulsin or other ferment capable of decomposing the former. When the amygdalin was, however, brought in contact with emulsin derived from other sources, the usual decomposition—production of benzaldehyde (oil of bitter almonds) and hydrocyanic acid—took place.

One of the most interesting trees he examined is *Pangium edule* Reinw. The seed kernels of this are an important article of food for the Malays, but they require special preparation (boiling with water, etc.) before they can be used. In their raw condition they are powerfully poisonous. In fact, all parts of the Pangium are used on Java as poison for insects, killing fish, etc.

The author found all parts of the tree to contain *free* hydrocyanic acid. The leaves yielded on distillation 0.34 per cent, corresponding to over 1 per cent when referred to the leaves in a dried state. Other parts contain less, but still notable quantities. He estimates the total quantity of hydrocyanic acid contained in an average Pangium tree to be about 350 Gm.

Note on Saponin.

Otto Hesse has studied the constitution of saponin, regarding which the statements of various investigators heretofore differed. In the first place, he comes to the conclusion that "saponin" obtained from Saponaria root, "quillajin" from Quillaja, and other similar bodies obtained from other sources, which had already been comprised under the general name of saponin by Christophsohn, are identical with "senegin" from Senega root.

Led by the study of the manner in which the substance splits, under proper treatment, into sapogenol ($C_{14}H_{22}O_2$) and glucose, he holds that the molecule of saponin is represented by $C_{32}H_{52}O_{17}$, the splitting up of this glucoside occurring by the interreaction of 2 molecules of it with 6 molecules of water:

$$\underset{\text{saponin}}{2C_{32}H_{52}O_{17}} + \underset{\text{water}}{6H_2O} = \underset{\text{sapogenol}}{2C_{14}H_{22}O_2} + \underset{\text{glucose}}{6C_6H_{12}O_6}$$

—After *Lieb. Annal.*, 261, 371.

How to Judge the Quality of Condensed Milk.

The general appearance when poured from a spoon should be glossy; the more glossy the better. It should be ropy or stringy, like very heavy syrup.

The color should be that of cream, but the color varies according to the season of the year in which the milk is condensed, the same as milk not condensed varies in color. Milk is more yellow in summer, when cows are on pasture, than in winter, when they are fed on dry hay.

Thickness varies with age. Thickening by age is natural to condensed milk; rapid thickening only proves that the milk is preserved in the best manner and that it retains in the highest degree the characteristics of milk in its natural state.

Condensed milk which does not thicken by age, or which thickens very slowly, is milk abused in the process of condensing.

Consumers make a great mistake in supposing that the thinnest condensed milk is the best.

The thinnest condensed milk usually contains the most water, and, of course, less milk solids or milk nutritives. The thickest condensed milk, if in sound condition, is the most valuable. It is, however, to be noted that the viscosity of condensed milk depends much on the temperature at which it is condensed. A milk containing 50 per cent of solids, evaporated at a very low temperature in the vacuum pan, may be more fluid or thinner than one containing 42 or 44 per cent which has been heated higher.

How Galls Grow.

At a recent evening meeting of the Pharmaceutical Society of Great Britain, Prof. Traill, of Aberdeen, addressed the audience on the subject "How Galls Grow." Following is the more interesting portion of his remarks (after *Pharm. Journ.*):

There are over a hundred different kinds of galls; they grow chiefly on the oak. But comparatively few are found in commerce, because it is a few only that contain a sufficient amount of tannic and gallic acids to make their collection profitable. Still, nearly all contain these acids. Chinese galls are formed by a different group of insects from those of the oak. As to oak galls, nearly one hundred kinds are described, and they are mostly formed by a puncture of the gall fly, a species of hymenoptera belonging to the *Cynipedæ*. A few, however, are produced by gall midges, a two-winged insect like the mosquito. It is at the end of spring or in May that the leaves of the trees are punctured by the insects.

The catkin of the oak is also touched, the galls formed being like red currants, and are soft, spongy, and sappy; but generally galls become hard, and in the centre is found the grub or larva of the insect in a single cavity. That applies in some cases; it is different in the oak apple, where there are a number of holes, each with its grub. It is these grubs which make the galls grow. Unhappily, other insects find a lodgment for their grubs in the galls, and these feed upon the substance and do not assist in the growth, while there are also parasites which destroy the gall grub.

One peculiar thing about the gall fly is that it is a subject of dimorphism; that is, there are two kinds of the same species, one producing galls in the spring, the other in the autumn. The galls are dissimilar and so are the larvæ—facts which have given rise to a great deal of confusion.

There are ten or twelve British species which are known to be dimorphic. Generally it may be said that each fly, each tree, and each season gives rise to its own kind of gall, and even the depth of the puncture determines the nature of the gall.

Chinese galls differ very materially from oak galls. The insect which produces them is an aphis or green fly, which attacks the *Rhus* and other plants. Unlike the gall fly of Europe, it not only deposits its eggs in the puncture, but it gets inside the gall itself, and continues to live on the juice of the plant as long as life is given to it; and that is why Chinese galls contain such a profusion of insect remains.

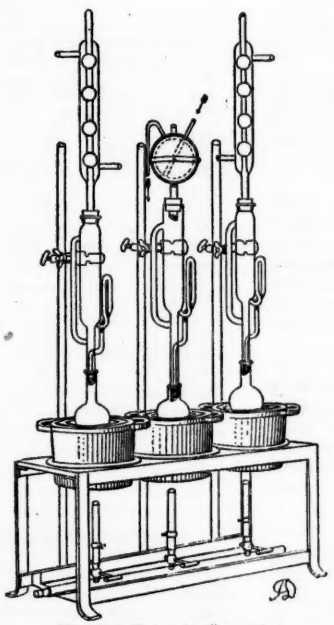
Besides these galls, Prof. Traill mentioned many others which are of no pharmaceutical interest. He remarked that it was difficult to define what a gall is, and that it was impossible to say how they were formed.

New Reagent for Tartaric Acid.

ACCORDING to Moehler (*Pharm. Rundschau*), a delicate reagent for tartaric acid is a solution of 1 part of resorcin in 100 parts of concentrated sulphuric acid. On evaporating a solution containing tartaric acid to dryness, adding to the residue 1 C.c. of the above-mentioned reagent, and gently warming without much stirring, red stripes will begin to emanate from the bottom of the capsule, or, if a notable quantity of tartaric acid is present, the whole liquid will become red. If organic substances are present which impart a dark color to sulphuric acid, such as sugar, gum, extractives, etc., these must first be destroyed by means of nitric acid and every trace of the latter afterwards expelled, since this would cause a deep blue color with resorcin, which would mask the red tint due to the tartaric acid. Benzoic, succinic, malic, and citric acids do not give this reaction.—*Neueste Erf. & Erf.*

MUENKE'S SUPPORT FOR EXTRACTORS.

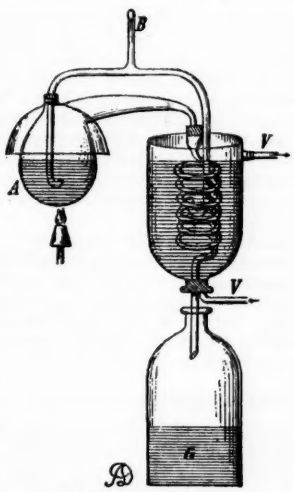
ROBERT MUENKE, of Berlin, has put on the market a durable support for extraction apparatus, combining all necessary features. That shown in the cut has three water baths, with gas burners under each, and three upright rods with clamps for the support of the extractors. The condensers, if properly inserted, need no support. — After *Chem. Zeitung.*



Muenke's Extractor Support.

KALECSINSZKY'S CONTINUOUS AND AUTOMATIC WATER STILL.

THE apparatus shown in the cut has been devised by Alexander Kalecsinszky. A retort, A, is connected with a condensing worm contained in a wide glass vessel, through which passes a constant but not too rapid stream of water. The retort is half filled with water at the start, and to prevent radiation of heat a cover, such as a porcelain bell, is put over it. Through the neck of the retort passes a glass tube of the shape shown in the illustration. The end of this tube inside of the retort is slightly bent upward, which is done for the purpose of producing a small water joint at the bend capable of preventing the passage of air up the tube. The other leg of the tube dips into the water of condensation. The vessel containing the latter is adjusted at such a height that the level of the water contained in it, when in full operation, shall be on a line with the point to which it is desired to keep the retort filled. On starting the operation the air contained in the communicating glass tube is aspirated through B, whereupon the whole tube will become filled with water. B being now tightly closed, the tube will act as a siphon, keeping the level of the two liquids, in the retort and the condenser, alike. From this time on the apparatus will continue working automatically, provided care is taken that no air can get into the tube B. The distillation of the water proceeds uninterruptedly, and all that is necessary is to change the receiver from time to time.—*Chem. Centralbl.*, 1891, 299.



Kalecsinszky's Still.

Undertaker—And what kind of trimmings will you have on the coffin?

Widow—Nane ava', a plain coffin. It was trimmins that killed him.

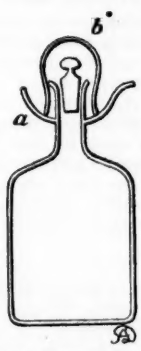
Undertaker—What?

Widow—Ay, delirium trimmins.

FIUMI'S REAGENT BOTTLE.

FOR the purpose of preventing the deterioration of reagents which are affected by contact with air, Johann Fiumi advises the use of reagent bottles provided with a cup-shaped receptacle about the neck, which is to be partly filled with a mixture of equal parts of water and glycerin, after which a bell glass, *b*, is to be put over the stopper, thus making a glycerin joint. These bottles are, at the same time, made from dark amber glass. The cup around the neck has a lip from which the contents may be poured. When the reagent is to be used, the glycerin is poured out, the cup rinsed out if necessary, and the stopper then withdrawn.

The author states that he has kept solution of hydrosulphuric acid for months unchanged in such bottles.—*Chem. Zeitung*, 14, 1063.



Fiumi's Reagent Bottle.

Terpin Iodide.

DR. W. H. GREGG, of New York, recommends "terpin iodide" as an antiseptic agent for the purpose of preventing the development of certain acute diseases of the lungs, such as acute congestion, pneumonia, and the catarrhal and throat affections which are often the precursory monitors of more serious mischief.

He believes that terpin iodide enters into the circulation unchanged, since he finds that it acts as quickly when given by the mouth as if it were given hypodermically. While it is a powerful antiseptic, it is comparatively harmless, no unpleasant effects having been noticed by the prescriber.—After *N. Y. Med. Journ.*

What is here called terpin iodide is, no doubt, the hydriodide of terpin, $C_{10}H_{16}HI$, a liquid corresponding in composition to the solid, so-called artificial camphor, the hydrochloride of terpin, $C_{10}H_{16}HCl$. It is prepared by conducting the vapor of hydriodic acid into French or American oil of terpentine, the latter being either pure or diluted with benzin or carbon disulphide.

Syrup of Tolu and Alkalies.—Mr. Lermigaux and the editor of the *Bulletin Commerciel* (of L'Union Pharmaceutique) point out that syrup of tolu is altered in color when coming in contact with alkalies. Though it may originally be colorless, or practically so, it acquires a yellowish or yellowish-green color when treated with sodium carbonate, dilute caustic potassa, ammonia, and other alkalies. A similar change of tint, though more feeble, is produced by iodide or bromide of potassium of commerce, since these salts usually have a faintly alkaline reaction.

Christia.

THIS is the name of a new impervious dressing recommended as a substitute for gutta-percha tissue. It is prepared from the fibres of manilla hemp, and impregnated with a matter unaffected by water, alcohol, chloroform, ether, ammonia, or fats. It has the appearance of a dark gutta-percha tissue, is dark brown in color, transparent, may be folded, bunched, or tied in knots, and can be readily smoothed out again by stroking with the hand. It is, however, not elastic. It does not become sticky, and may be used in any climate.

The "christia" is not only supplied pure and simple, but also impregnated with boric, carbolic, and salicylic acids, iodol, etc.—After *Pharm. Zeit.* (No. 7).

The Constitution of Oil of Rose.

TH. POLECK has made a preliminary report of results which he has obtained in the study of the composition of oil of rose. The oils he had under his hands were:

1. A sample of the purest Kezanlik oil of rose, deprived of its stearopten, and supplied by the well known house of Schimmel & Co.

2. A sample of the oildistilled by Schimmel & Co. from roses of their own cultivation, the purity of which was guaranteed.

On subjection of the oils to fractional distillation, the first fraction of the German oil passed over between 79° and 81° C. After being rectified it boiled at 79° C. It turned out to be ethylic alcohol, amounting to 5 per cent of the oil. No terpenes could be discovered. The German oil was then freed from its stearopten and fractionated under diminished pressure. The largest portion—which seems also to be the sole high-boiling constituent—which passed over at 110°–120° under a diminished pressure (of 14 Mm.), was afterwards found to have the boiling point 215° C.

The Turkish oil yielded the same constituents. Both high-boiling liquid fractions—that of the German as well as that of the Turkish oil—are faintly lævogyre. The specific gravity of the German is 0.8837 at 11° C., and that of the Turkish 0.8813 at 12° C. Their composition corresponds to the formula $C_{10}H_{18}O$, which needs further study.—Abstract from *Berichte*, vol. 23, 3554.

Note on Gun Cotton.

IN a recent lecture on gun cotton delivered by Professor Munroe, of the Torpedo Station at Newport, the lecturer declared that gun cotton, correctly prepared and handled according to directions, was the safest of explosives to use. It was dangerous only when the materials had not been thoroughly purified, or the union of acid and cotton incomplete.

In proof of what could be done with it, a picture was thrown upon the screen showing the workman cutting it with chisel, jig-saw, and lathe to fit it into a shell. Another illustration was the extinguishing of a block that was burning by pouring water upon it. Two thousand pounds of it had been burned in a bonfire without an explosion.

One volume of the explosive gives 829 of the gas, and the pressure developed by combustion is 81 tons to the square inch, and by detonation 157.5 tons, the latter being in contact, however. The effect of the explosion of one particle on another is so rapid that it would take only one second for it to pass through 19,000 feet of the explosive.

It was shown by the stereopticon that the letters U. S. N., with the date of manufacture, that are in the bottom of each block, are impressed upon an iron plate upon which the gun cotton may be exploded. It is a curious fact that, if the marks on the block are in relief, the reproduction on the iron will be raised; and if cut in, there will be an indentation on the plate. Professor Munroe's theory is that when the letters are cut into the explosive, the gases generated in the indentations are hurled from them as a projectile from a gun. If a leaf or a delicate piece of lace be laid between the gun cotton and the iron, its impress will be left in all the perfection of outline of the original, though the article itself is absolutely annihilated.

Freezing Mixtures.

THE following selection of mixtures causing various degrees of cold, the starting point of the cooling being indicated in the first column, will probably serve many purposes. It should be stated that the amount of depression in temperature will practically be the same, even if the temperature to start from is higher. Of course, in the case of snow it cannot be higher than 0° C. (32° F.). But in some cases it is necessary to start at a temperature below 0° C. For instance, the temperature of —49° C. may be reached by mixing 1 part of snow with ½ part of dilute nitric acid. But then the snow must have the temperature —23° C. If it were only at 0° C. the depression would be only to about —26° C :

Substances to be mixed in parts by weight.	The temperature sinks from	to
1. Water ..... 1 Ammonium Nitrate 1	+ 10° C.	— 15.5° C.
2. Dil. Hydrochloric Acid...10 Sodium Sulphate.....16	+ 10	— 17.8
3. Dil. Hydrochloric Acid... 1 Sodium Sulphate..... 1½	+ 10	— 16
4. Snow..... ..... 1 Sulphuric Acid..... 4 Water... 1	+ 0	— 32.5
5. Snow..... 1 Dil. Sulphuric Acid.... . 1	— 7	— 51
6. Snow..... 1 Dil. Nitric Acid..... .. ½	— 23	— 49
7. Snow..... ..... 1 Sodium Chloride..... 1	0	— 17.8
8. Snow..... .... 1 Calcium Chloride..... 1.3	0	— 49
9. Snow . .....*... 1 Hydrochloric Acid..... 0.625	0	— 33
10. Snow..... .... 1 Sodium Chloride..... 0.4 Ammon. Chloride 0.3	0	— 24
11. Snow..... ... ... 1 Sodium Chloride..... 0.416 Ammon. Nitrate. 0.416	0	— 31

Edison's Definition of Ampere and Volt.

THE following question was put to Thomas A. Edison by John S. Wise in a recent lawsuit in which Mr. Edison was a witness. The answer by Mr. Edison gives a pretty clear definition of the words "ampère" and "volt," which are now much used :

Q.—"Explain what is meant by the number of volts in an electric current."

A.—"I will have to use the analogy of a waterfall to explain. Say we have a current of water and a turbine wheel. If I have a turbine wheel and allow a thousand gallons per second to fall from a height of 1 foot on the turbine, I get a certain power, we will say 1 horse power. Now, the 1 foot of fall will represent 1 volt of pressure in electricity, and the thousand gallons will represent the ampère or the amount of current; we will call that 1 ampère. Thus we have a thousand gallons of water or 1 ampère, falling 1 foot or 1 volt or under 1 volt of pressure, and the water working the turbine gives 1 horse power. If, now, we go a thousand feet high, and take 1 gallon of water and let it fall on the turbine wheel, we will get the same power as we had before, namely, 1 horse power. We have got a thousand times less current or less water, and we will have a thousandth of an ampère in place of 1 ampère, and we will have a thousand volts in place of 1 volt, and we will have a fall of water a thousand feet as against 1 foot. Now, the fall of the water, or the height from which it falls, is the pressure or volts in electricity, and the amount of water is the ampères. It will be seen that a thousand gallons a minute falling on a man from a height of only 1 foot would be no danger to the man, and that if we took 1 gallon and took it up a thousand feet and let it fall down it would crush him. So it is not the quantity or current of water that does the damage, but it is the velocity or the pressure that produces the effect."

Bromine in the United States.

THE most important bromine works in this country are at Canal Dover, Ohio. These were opened in 1871, and last year the output of the works was 200,000 pounds, only 110,000 pounds coming from the other works in Western Pennsylvania, Western Virginia, and Michigan.

Bromine is a by-product of the salt industry, occurring in the form of bromides in the bittern. The proportion between the bromides and salt differs in different localities. At Canal Dover, Ohio, from 1877 to 1887 there were produced 222,669 pounds of bromine and 259,350 barrels of salt, or about 6 pounds of bromine to 7 barrels of salt. In the Pomeroy district the proportion was 1 pound of bromine to 2 barrels of salt. To produce the bromine about half a million pounds of pyrolusite are required.

In Michigan potassium chlorate is used as the oxidizing agent, as the bittern there contains a large proportion of calcium chloride. Potassium chlorate requiring less sulphuric acid, the deposit of calcium sulphate is not so great when it is used, so that it gives less trouble.

[A description of the method employed and other matters of interest connected with the works at Canal Dover, Ohio, were published by this journal in the issue for the month of July, 1884.—ED. AMER. DRUGG.]

A New Solvent for Cellulose.

MESSRS. CROSS & BEVAN have found that an acid solution of chloride of zinc is a most efficient solvent of cellulose. It is best prepared by dissolving in concentrated hydrochloric acid half its weight of chloride of zinc, thus producing a liquid of the spec. grav. 1.440. This dissolves cellulose instantly and without apparently changing it chemically. Cellulose may also be dissolved by heating it with a concentrated solution of zinc chloride; and this may be diluted with hydrochloric acid without precipitating any of the dissolved products. But the beforementioned acid solution has the advantage that it effects the solution in the cold and at once.

The reagent is of special value in the elucidation of structural problems under the microscope. All forms of pure cellulose are rapidly dissolved by it, and the various stages preceding their final disappearance may be observed under the lens, the observation throwing much light on structural peculiarities. The raw fibres, such as cotton and flax, are not dissolved, at least only partially; but they swell up under the action of the reagent, with the result that the structural features are brought out with great prominence. Jute, and the ligno-celluloses generally, are dissolved by it, and many of the adipocelluloses also.—After *Chem. News.*

Note on Granulated Salts.

MR. HEDLEY PATTERSON, in a recent paper read at Newcastle-on-Tyne on the subject of effervescent preparations, spoke of the methods of preparing granulated salts at present in use, and mentioned one which seems to be used in practice, but is only known to a few.

The first process in use is to make the ingredients into a tough paste with alcohol, press the mass through a sieve, and dry quickly. Another method is to heat the dried ingredients together until a temperature between 200° and 212° F. is reached, stirring well all the while so as to form granules; then, by means of suitable sieves, separating the granules and preserving in well-closed bottles.

To both of these processes, the author says, there are objections. The first method, of course, is too expensive. In the second method, official in the British Pharmacopœia, there is a large amount of waste, as it is impossible to get all the base and active ingredients into granular form, the larger proportion of powdery product mixed with the granules giving the preparation an inelegant and "saline" appearance. According to the official directions, the granules are to be separated from the powder. But the latter is just as likely to contain more of the active ingredient than the granules.

The third process mentioned by the author as superior to either is the following: Heat the ingredients quickly, with manipulation, until the mass becomes pasty. Lift up the pasty portion, at intervals of a few seconds, to the top, so as to allow all the powder to come into contact with the bottom of the granulating tin used. Then press it through a wire sieve of a convenient sized mesh. Receive the granules on white paper, and dry them in a warm room on suitable trays. The heat must be properly regulated so as to avoid too great a loss of carbonic acid, which would render the product deficient in effervescence. —After *Pharm. Journ.*

Further Notes on Azoimid.

WE have already given some account of the remarkable new compound of nitrogen and hydrogen which has recently been discovered, viz., N_3H, an acid designated as azoimid, or nitrohydric acid [as appears to us, the most suitable translation of the German "Stickstoffwasserstoffsäure"]. The discoverers, T. Curtius and R. Radenhausen, have recently succeeded in preparing the substance in a pure state. While its exceedingly powerful explosive property was already known from the study of its more dilute aqueous solution, the danger of handling the substance in its pure state, even in very small quantities, is so great that the discoverers hasten to warn others against experimenting with it.

Azoimid, when pure, is a mobile liquid, colorless like water, and boiling without decomposition at 37° C. It is miscible with water and alcohol, and possesses a most powerful, almost insupportable odor. It explodes when it comes in contact with a heated body, often also without any known cause. *The explosion is without parallel in violence*, and is accompanied by a brilliant blue light. It was prepared by the authors by subjecting the aqueous acid to fractional distillation.

On introducing 0.05 Gm. (about seven-eighths of a grain) into a tube over mercury and evacuating the air, the resulting explosion reduced the whole apparatus to dust and scattered the mercury in the most minute, impalpable particles even into the most remote parts of the large workroom. And once, on removing a little vial containing 0.7 Gm. (about 11 grains) of azoimid from a freezing mixture, the substance exploded, producing such a pressure of air that all glass vessels in the neighborhood were completely demolished, and one of the operators (Mr. Radenhausen) received serious injuries.—After *Zeitsch. f. prakt. Chem.*, 189, 207.

Nickel-in-the-Slot Portraits.

DAGUERRE would turn over in his coffin if he knew the latest development of the art of which he is the patron saint. Photography, after many vicissitudes, has finally reached the nickel-in-the-slot point of excellence, and an association, styling itself the Automatic Phototype Company of New York and New Jersey, is engaged in the business of constructing machines that will enable every one to take his own portrait for the small consideration of five cents, and in the brief period of three minutes. These machines, larger than the automatic penny-in-the slot weighing devices, are to be placed in ferry-houses, railroad stations, hotel corridors, and other public resorts where people are accustomed to waste valuable time, and it is believed that the company, whose paid-up capital is $300,000, will make some money out of them.

The portraits are not imperial or cabinet photographs, but are very fair tin-types, 1¼ by 1¾ inches, and the operation of taking them is exceedingly simple, consisting of sitting in front of the camera, dropping in a nickel, and turning a crank. In three minutes the picture is delivered.

The interior of the machine is a marvel of ingenuity, the progress of the plate being accompanied by mechanical movements that almost put in the shade the human hand. The metal fingers seem to think as they remove the little piece of tin from vat to vat, from bath to bath, keeping it five seconds in one, ten in another, twenty in a third, and so on, till it is ready for delivery. Edmund G. Fisher is the inventor, but he is prouder of the new developer he has discovered than of the machine itself, because the developer made the machine a possibility.

The officers of the Automatic Phototype Company are: President, Chandos Fulton; Vice-President, Louis Runkel; Secretary, William J. Lippman; Treasurer, Berthold Nathan.

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INFORMATION WANTED.

OUR *readers will confer a favor by answering any of the following questions and referring to them by number. We will undertake to forward the answers to inquiries when the request for information is accompanied with a directed envelope and postage. The names of the respondents (unless otherwise indicated) will be published in the next issue of the journal.*

ANSWERS.

No. 2,501.—**Improved Process of Manufacturing Potassium Cyanide.** Mr. L. J. Millard, of London, Eng., kindly informs us that the address of Mr. H. N. Warren, the author of the paper referred to, is 18 Albion St., Everton, Liverpool, Eng.

No. 2,502.—**To Remove Tattooing.** Mr. T. W. Dodd, of Walsingham, England, writes as follows in the *Chemist and Druggist*, issue of December 13th last:

"Twenty years ago I removed three very indelible tattoo marks on my hand. Certainly it left a scar, but now it is scarcely perceptible. The operation was performed by applying nitric acid with the stopper of the bottle (a better instrument would be a glass rod pointed, to carry the acid), just sufficient to cover the stain, so as to avoid making a larger scar than needful, the acid to remain about one and a half minutes, until the *cutis vera* was penetrated and a crusted appearance shown, then washed off with clean cold water. In a few days after this treatment a scab forms, which contains the tattoo mark or stain; remove it, and should inflammation supervene, poultice and bathe with warm water. In this way the skin with the stain is not only removed almost painlessly (I mean tattoo marks about the size of peas), but the nitric acid at the same time to a certain extent seems to decolorize the stain. Of course large tattoo marks, greatly extending over the surface, must necessitate the operation being performed differently.

Trusting the above will be of use to your correspondent, I remain, Yours truly,

L. A. HOERNER,
Three Rivers, Canada.

[Dr. Variot, of the Paris Biological Society, advises the following method (see AMER. DRUGGIST, 1889, p. 25): Tattoo the skin, in the usual way, with a concentrated solution of tannin, following the original design. Then apply a crayon of nitrate of silver until the part tattooed with the tannin blackens. Wipe off excess of moisture and allow matters to take their own course. Slight pain continues for two to four days, and after two months the cicatrix which results will almost disappear.—ED.]

Nos. 2,503 and 2,507*a*.—**Wine Mitchella, comp.** Compound fluid ext. squaw vine [*Mitchella repens?*], alcohol, āā f ʒ i.; sugar, ℥ i.; sherry wine, q. s. to make Oi. Dose, one teaspoonful.

No. 2,507*b*.—**Syrup White Pine, comp.** Compound fluid extract of white pine, f ʒ iv.; syrup, f ʒ xij.

M. B. STANTON,
Sheridan, Mich.

[The composition of these two compound fluid extracts being unknown, leaves something still unanswered. See below.—ED.]

No. 2,509.—**Liquid Slating without Alcohol.** Lamp black, 1 oz.; pumice stone (powd.), 4 oz.; linseed oil (boiled), 8 oz.; spirit of turpentine, enough to make 2 pints. Mix.

E. J. KENNEDY, Detroit, Mich.

No. 2,510.—**Bulow's Tablet Machines** can be supplied by me. There are two sizes. Price £10 and £17. Like No. 2,512, I have not succeeded in drawing a reply from J. M. Richter, of Gratz.

F. FOSTER,
29e St. Nicholas St.,
Scarborough, Eng.

QUERIES.

2,514.—"Can you give us any information as to how we may use ordinary paste to stick lithographed labels to tin? We think you may be able to inform us of some ingredient which, if compounded with paste, will make adhesion perfect."

2,515.—**Compound Fluid Extract of Squaw Vine.** Formula wanted.

2,516.—**Compound Fluid Extract of White Pine.** Formula wanted.

2,517.—Dr. Doremus' method for **Softening Hard Water**, without the aid of caustic soda, for laundry purposes. [Ans. by Editor.]

2,518.—Please give me the etymological signification of "prunella" as found in the title Sal Prunella. Give me its root or primitive derivation, definition, and subsequent combination as used in the title named, etc.

2,519.—**Ely's Cream Balsam.**

2,520.—**Dr. King's New Discovery for Rheumatism.**

2,521.—**Gombault's Caustic Balsam.**

2,522.—**Sanford's Liver Invigorator.**

2,523.—**Ayer's Cherry Pectoral.**

2,524.—**Syrup Figs** (California Co.)

All Watches are Compasses.

A FEW days ago I was standing by an American gentleman, when I expressed a wish to know which point was north. He at once pulled out his watch, looked at it, and pointed to the north. I asked him whether he had a compass attached to his watch. "All watches," he replied, "are compasses." Then he explained to me how this was. Point the hour hand to the sun, and the south is exactly half-way between the hour and the figure XII on the watch. For instance, suppose that it is four o'clock. Point the hand indicating four to the sun, and II on the watch is exactly south. Suppose that it is eight o'clock, point the hand indicating eight to the sun, and the figure X on the watch is due south. My American friend was quite surprised that I did not know this. Thinking that very possibly I was ignorant of a thing every one else knew, and happening to meet Mr. Stanley, I asked that eminent traveller whether he was aware of this simple mode of discovering the points of the compass. He said that he had never heard of it. I presume, therefore, that the world is in the same state of ignorance. Amalfi is proud of having been the home of the inventor of the compass. I do not know what town boasts of my American friend as a citizen.—*London Truth.*

NEWS FROM THE TRADE.

NOTES FROM ENGLAND.

[FROM OUR OWN CORRESPONDENT.]

LONDON, March 10th, 1891.

THE proposed proprietary rebate plan suggested by the joint conference committee under Mr. M. N. Kline has attracted some attention here, and the question whether the retail trade will seriously take the matter has been variously discussed. At first sight the method appears a very cumbersome one wherewith to gain protection from the inevitable "cutter." Moreover, experience here with rebate systems is not encouraging, as they are usually unsatisfactory from the length of time before rebate payment is obtained, thus causing some locking-up of capital. In the case of rebate of alcohol duty allowed by the revenue here upon tinctures exported under regu lations, it is usually two or three months before payment is effected, and, as the amount is often several hundred dollars on each consignment, it is of some importance to the wholesaler. One point, however, in connection with the scheme deserves special admiration, and that is the spirit of unanimity that prevails amongst manufacturers, jobbers, and leading retailers alike.

In England we have only two serious attempts to meet the great difficulty. These are by the proprietors of a popular embrocation, Messrs. Elliman, Sons & Co., of Slough, and the proprietors of "Moonseed Bitters," Messrs. Powell & Co., of Swindon.

The plan adopted in each case is practically the same. The wholesale houses supplying retail chemists or stores are compelled to obtain from their customers signed agreements not to retail under the advertised prices to any person whatever, whilst it also necessitates the keeping of a register by the wholesaler of all chemists who have signed the agreement. The latter provision is, perhaps, the principal drawback to the method, as it naturally entails extra work on the wholesalers without any commensurate benefit.

Whether it works well or not in practice it is difficult to determine accurately. The proprietors in question profess to be quite satisfied, but as occasionally rewards are offered by public advertisement of $25 to any person giving them information as to the sources of supply of certain "cutters," it evidently must be now and then surreptitiously broken.

One thing is certain: if the plan is ever to be extended and the trade in proprietary articles adequately protected, there will have to be more unanimity here between proprietors themselves. Unfortunately there is no such thing as a society, association, or union of manufacturers in the proper sense of the term. It is true there is an occasional meeting of the principal wholesale druggists, who discuss matters affecting their own immediate interests, but it is only a nominal association and by no means representative.

Although the above is the only recognized plan adopted for meeting "cutters," it should be stated that many firms discountenance cutting by every means in their power. Some wholesale houses refuse to supply the stores direct, so compelling them to pay a slightly higher price for their goods. Others adopt the plan of sending a traveller down to a town where extreme cutting has been rife, and it is wonderful how in a short time it is possible to convince the majority of chemists that it is better policy to maintain rather than cut rates.

In a recent paper read before the Manchester section of the Society of Chemical Industry, Dr. B. W. Gerland drew attention to the value of thymol as a preservative of standard solutions prone to decompose on keeping. Those who have much volumetric work will be glad to hear that a crystal of thymol placed in the standard normal or decinormal solution of oxalic acid preserved it completely for over two years. In the same way the author states that permanganate of potassium solution may be preserved, and in each case no effect on the usual titration is produced.

Euonymin of American manufacture was supposed to take a back seat when our Pharmacopœia Committee was known to be working on the subject. The result, which is detailed in the British Pharmacopœia additions under the title of Dry Extract of Euonymus, can hardly be considered satisfactory, and will not compare for a moment with the fine powder sent out by Parke, Davis & Co., Schieffelin & Co., and other well-known houses.

The British Pharmacopœia method may be briefly described as exhausting the powdered root with a mixture of equal parts of rectified spirit (56 O. P.) and water, distilling off the spirit, and evaporating the extract with the addition of 20 per cent of sugar-of-milk. The final product, containing only 80 per cent of extractive, was of a dirty brown color, very hygroscopic, but with a pure bitter taste. The average yield from good samples of euonymus was 3¼ to 3½ ounces extract from a pound. But the principal objection has been pointed out by a critic in the *British and Colonial Druggist*, viz., that it will not retain its pulverulent form even in a stoppered bottle. It is very probable that if the process had been carried out entirely as recommended by Mr. W. A. H. Naylor, F.C.S., chemist to Messrs. Hearon, Squire & Francis, by first percolating with water to remove gummy matter, this grave objection would have been surmounted.

It is generally believed here that the new edition of the United States Pharmacopœia will contain methods of standardizing at least nux vomica and its preparations, and perhaps those of aconite, henbane, and belladonna. Already some work is in progress on the last three in this country, but the initial difficulty has to be solved--whether it is better to assay the drug itself, from which the extract, tincture, and other galenicals could be made of definite strength, or whether an extract of assayed strength (such as the British Pharmacopœia extract of nux vomica containing 15 per cent of alkaloids) should be the basis of other preparations. The action of the representative United States Pharmacopœia Convention in the matter will be awaited with interest.

A dull market, both in chemicals and drugs, has ruled during the last month. Demands have been very limited, and values have consequently declined. Sulphate of copper is neglected in spite of the publication of figures showing that stocks are only half as large as this time last year. Iodine is carefully maintained at syndicate prices, and there is no improvement in mercurials. Quinine is depressed; it is doubtful if bottom price is reached even now, as there are very few buyers. The cinchona sales last week were not encouraging; 2,500 bales of Indian and Ceylon barks were offered, and only 1,620 changed hands. Prices were fractionally lower, but the unit remains at 2½ cents. Opium was in tolerable demand, and some transactions were done for early delivery. Ipecacuanha is firmly maintained; it is said the "ring" are determined to obtain even higher prices. Oils are quiet and shellac remains unaltered.

The following are current prices:

Acid, carbolic	per lb.,	$0.16	Oil, castor	per lb.,	$0.08
citric	"	.42	cotton	per cwt.,	4.40
oxalic	"	.07	linseed	"	5.25
tartaric	"	.31	olive	"	8.20
Bleaching powd.	per cwt.,	1.60	turpentine	"	7.00
Camphor, crude	per lb.,	.34	petroleum	per gal.,	.11
refined	"	41	Peppermint HG.,	per lb.,	3.48
Cinchona, Ceylon,	"	.09–.15	Opium	"	2.06
E. Indian	"	.10	Potash, bichrom.	per lb.,	.07½
Java	"	.12	chlorate	"	.11
S. America	"	.14	nitrate	per cwt.,	4.45
Copper sulphate	per cwt.,	4.02	Quinine, Ang.	per oz.,	.26
Cream of tartar	per lb.,	.20	Germ	"	.21
Ergot	"	.28	Shellac, TN	per cwt.,	20.10
Iodine	per oz.,	.18	garnet	"	19.70
Jalap	per lb.,	.40	button	"	21.30
Mercury	"	.48	Soda, caustic, 70°	"	2.75
Calomel	"	.80	crystal	"	.76
Corrosive sub.	"	.64	bicarbonate	"	1.70
Pimento	"	.06	Stick-lac	per cwt.,	16.40–17.70

THE thirteenth annual meeting of the **Ohio State Pharmaceutical Association** will be held in Dayton, Ohio, June 9th, 10th, and 11th, 1891. All communications in reference to the exhibition of drugs, chemicals, etc., should be addressed to the local secretary, Mr. J. G. Spengler, 2d and Webster streets, Dayton.

LEWIS C. HOPP,
Permanent Secretary.

CLEVELAND, O.

MICHIGAN.

FOWLERVILLE was visited with a most destructive conflagration last week, most of the drug stores being wiped out. Messrs. Cooper & Osborne, J. P. Spencer, and J. L. Cooper lost everything, A. M. Gardner's store being the only pharmacy which escaped total destruction.

The bill to permit physicians and surgeons to register as first-class pharmacists has been favorably reported upon by the bright-witted committee of enlightened hayseeds to whom it was referred. It will now be in order to introduce a bill entitling registered pharmacists to practise medicine. What a howl would go up from the exponents of ethical medicine were this to be actually proposed! And yet the one proposition is no more absurd than the other.

At the last meeting of the State Board of Pharmacy, held at Grand Rapids, ninety-three applicants were examined. Twenty-four were given the certificate of first-class pharmacists, forty-five that of assistant pharmacists, and the remaining twenty-four failed entirely.

Following are the names of those who were successful:

First class Pharmacists.—Wm. C. Babcock, of Britton; Fred. H. Dorradale, Ann Arbor; A. Clement Davis, Grand Ledge; George C. Fenton, Bailey; Frank M. Fisk, Edwardsburg; Enos Golden, Fenton; Andrew J. Goodwin and Frank L. Hayes, Detroit; Archie W. Herrick, St. Louis; Mort F. Miller, Cadillac; Wm. Mortimer, Yale; Wallace E. Newark, Brookfield; Albert A. Patterson, Samuel R. Smith, and Alvah P. Scriver, Grand Rapids; Edwin H. Pierce, Allegan; George Ramsell, Red Jacket; Charles S. Rannels, Vermontville; Miles E. Riggs, Cheboygan; Hiram W. Schall, Three Rivers; Richard A. Servis, Pentwater; Albert F. Lamb, Forrest M. Weber, Detroit; Fred. S. Tuxburg, Hart.

Assistant Pharmacists—Henry W. Andrews, Adrian; Lucien M. Beal, Richland; Wm. R. Bacon, Sault Ste. Marie; Myron E. Bidwell, Dowagiac; Henry J. Connell and Wm. S. Day, Belding; Cornelius de Jonge, Zeeland; Ernest L. Erb, Coopersville; Byron E. Foley, Lakeview; Hart P. French, Mulliken; Wm. L. Holland, St. Joseph; Curtiss E. Humphrey, Holly; George A. Johnson, Boyne City; Freeman R. Jones, Muskegon; Theodore Karmsen, Greenville; Richard E. Kincaid, Hersey; Addison L. Kirtland, Lakeview; Wm. F. Knabb, Monroe; Julius F. Kaeding, Fred. A. Sweet, Frank Lane, and George van Nostitz, Detroit; Oliver B. Leonard, Wm. Darth, Vinton J. Rickert, Henry Richell, Benjamin O'Bosma, Lewis E. Chappell, Albert Coe, and Henry W. Fox, Grand Rapids; John W. Loppenheim, Ludington; Newell McDonald, St. Johns; John J. Master, Lansing; John Mastenbrock, Muskegon; Wm. Molloy, Minden City; Omar A. Nichols, Battle Creek; Artemus A. Perry, Dowagiac; Moses E. Rensch, Ionia; Charles A. Robertson, Coopersville; Zimmerman Ross, Marlette; Cornelius N. Ware, Colon; Fred. Weinman, Lansing; Claude White, Lakeview; Charles T. Eckerman, Muskegon; Henry Riesinger, Cedar Springs.

The Detroit College of Physicians and Surgeons recently gave the first of their series of monthly reunions, followed by a supper at the Hotel Cadillac. The new officers are: President, W. A. Polglaise; vice-president, J. M. Griffin; recorder and treasurer, Harold Wilson; corresponding secretary, V. T. Smith; curator, R. E. Gustin; member Board of Control, T. P. Wilson; delegate to Michigan State Homœopathic Society, Mary A. Willard; delegate to Ohio State Homœopathic Society, T. P. Wilson; delegate to American Institute of Homœopathy, J. M. Griffin.

When a well-known pharmacist failed last year, he owed a certain coal dealer $5. To recompense himself for the loss of the interest on the account, the latter gave the druggist a thrashing. The druggist now has a store on Trumbull avenue, and last Thursday the coal dealer came in and noisily demanded payment of the old bill. Pharmaceuticus seemed glad that an opportunity had arrived for him to discharge his obligation, and told his creditor to wait until he could make out a receipt. In a moment he emerged from behind his prescription counter with the "receipt" in the shape of a revolver, and then had the vender of fuel arrested for creating a disturbance in the store. The next morning the latter was released under suspended sentence at the police court, still hankering after his long-lost "V."

The deplorable results which ensue when partisan politicians are allowed to interfere in medical matters, were strongly shown in a recent disgraceful occurrence at Grand Rapids. Two city prisoners in the Kent County Jail were taken sick and the county physician sent for. He refused to attend the cases on learning they were city prisoners, and the city physician was called. He also refused, on the ground that it was the duty of the county physician to attend all prisoners at the jail. The jail officials finally, becoming exasperated, sent for an outside physician, who consented to prescribe for the men, but would not furni h medicine. The turnkey telephoned the sheriff, who referred him to the chief of police. The latter refused to have the prescriptions filled, saying that, although they were city prisoners, the sheriff was responsible. The patients were finally locked in their cells without any medicine at all. The next morning the sheriff had the prescriptions filled, and paid for them out of his own pocket rather than see the prisoners suffer any longer. The whole affair is owing to a squabble in the board of supervisors over the bills presented by the county physician.

One of the causes which tend to bring the druggist into disrepute, and make the public look upon him as a vulture that profits through the misfortunes of humanity in general, is the fact that quacks and charlatans invariably refer to him as a creature of soulless greed, whom it is necessary to avoid on any and every occasion. One of this class of advertising philanthropists is at present afflicting the otherwise placid City of the Straits, in the person of "Dr. Frank Smith." According to his advertisements, he is "endowed with a strange and mysterious gift to heal disease," and, what is still more remarkable, "cures all female complaints without the use of instruments or exposure of the person." At one of his séances, which the DRUGGIST'S correspondent attended, his exhibition of the strange and mysterious gift was truly wonderful. His first subject was an unfortunate being whom the doctors had given up to die with Bright's disease. Dr. Smith first grabbed both his hands and sat for a few moments intently looking at him with a yearning, ten-dollar gaze in his clear blue eye. Then, after giving the patient several sharp blows in the pit of the stomach, thus rendering him speechless, he kneaded the small of his back with great vigor, and assured him he was quite well, emphasizing his assurance with a muscular push which sent the tottering subject across the stage on a trot, where the doctor's assistant, with a similar assurance and emphasis, whirled him around and sent him back. The doctor then informed the audience that the patient's urine was probably free from albumin. The next subject was a large, heavy man who had been troubled ever since the close of the war with rheumatism. He walked with difficulty, and his disease was evidently genuine. The doctor gave him a treatment, told him he was cured, and ordered him to bend over and touch the floor. The man obeyed, but apparently with great pain, and then remarked rather dubiously that he "thought he felt better." "Of course you feel better," said the doctor. "Certainly he does," chimed in his assistant, who, turning to the audience, said: "The man is now cured, ladies and gentlemen. After suffering terrible agony for over twenty years, Dr. Smith has made him well in one minute. Think of it!" The audience thought of it, while the patient hobbled off the stage, and the assistant declared "he walked like a young man of twenty." Numerous other sufferers were "cured," including cases of lumbago; locomotor ataxy combined with deafness; a lady who had had a "pain from birth," the location of which she refused to disclose from motives of modesty; a colored gentleman afflicted with constitutional insufficiency; an old man who had suffered with an ache in his groin for forty years, along with obstinate constipation, and several others. The old man said he was cured, but it is to be regretted that he did not offer some convincing evidence that his obstinate constipation had been overcome.

The doctor's method of curing deafness furnishes a typical illustration of his powers of "magnetism." It consists of inserting one finger of each hand in the patient's ears, and withdrawing them suddenly with a loud

snap like the report of a toy pistol. The patient stands it as long as he can, and then declares he can hear as well as ever—probably because he fears the result of such continued application of this powerful remedy, "animal magnetism." Several of those who had been treated were positive they could feel currents of electricity running up their arms whenever the doctor held them by the hands. An effort was made to see the doctor's first case, the chronic nephritic who had been so heroically dealt with, but he was nowhere to be found. He had escaped unnoticed, taking his precious de-albuminated urine with him.

The committee appointed to investigate the dissecting-room outrage at the Michigan College of Medicine and Surgery, which was the cause of Dr. Mulheron leaving the institution, has submitted its report. It says the evidence obtained seems to exonerate the students charged with the affair, and, further, that the committee has been unable to locate the perpetrators of the deed. One night, about Christmas time, the corpse of a woman lying in the dissecting room was mutilated and cut to pieces, the head and extremities being scattered around the premises and on the street. Dr. Mulheron suspected certain students, and the next day questioned them before the rest of the class as to their whereabouts the previous evening. This method of procedure was objected to by the other members of the faculty, and in consequence Dr. Mulheron tendered his resignation.

A "well-known physician," who modestly refrains from giving his name, however, has been telling the reporter of an evening paper how the laws are being flagrantly violated by the druggists of Detroit. After quoting at length from Howell's Annotated Statutes, he goes on to say: "The law is all right, but I doubt very much whether it is lived up to by the pharmacists or enforced by the State. It would be a good thing to insist that where such cases are discovered by the coroner he be specially delegated to prosecute druggists under the State law. It was recently shown that druggists in this city sold liquor illegally, and I believe they are guilty of the same offence in regard to poisons." Charity does not always begin at home, but there are a great many times when it *ought* to.

A bill has been introduced in the House calling for an appropriation of $10,000 for the establishment and maintenance of a bomœopathic school of medicine upon the grounds of St. Luke's Hospital at Detroit. If the measure is passed, it is expected that it will ultimately lead to the removal of the present homœopathic school from Ann Arbor.

The Botanical Department of the Agricultural College has issued Bulletin No. 72, which contains descriptions of, and remedies for, six of our most troublesome weeds: Canada thistle, red root, moth mullein, toad flax, rib grass, and narrow dock. A novel and useful feature of the bulletin is that samples of the seeds of the various plants are glued on the pages, thus furnishing the farmer with a sure means of identifying the weeds. These bulletins are of great value to all engaged in agriculture, and are becoming daily more appreciated, as shown by the fact that the demand for them has almost doubled during the last year.

Dr. William Bell, of Smyrna, Ionia County, has drawn up a bill, which is now being considered by the House at Lansing, in which he proposes to abolish the medical department at the University altogether. Representative Hawley, of Ionia, introduced the curio, and speaks thusly regarding it: "Dr. Bell belongs to the eclectic school, and believes that all medical schools should be on an equality and given an equal chance at the University. I fully agree with him, and in many respects I think the measure I have fathered is a just one."

The Provincial Board of Health of Ontario has memorialized the Michigan Legislature, deprecating the proposed abolition of the State Board of Health, and pointing out that the absence of such a board would force the neighboring States and Provinces, in the event of an outbreak of the more serious diseases, to take measures for their own protection which could not fail to affect injuriously the property and commercial interests of the State. It is to be hoped this merited rebuke will have the effect of bringing our knavish demagogues back to their senses.

A free dispensary has been opened on the corner of Michigan avenue and Wayne street. It is called "The Detroit Medical and Surgical Free Dispensary," and is open for an hour or two in the middle of the day. The physicians in attendance are Drs. Hislop, Finlayson, Collins, J. Owen, Crawford, and Newell. Local druggists do not look upon the establishment of free dispensaries in the light of an unmixed blessing, though doubtless when their services are confined to the deserving poor they are praiseworthy in the highest degree.

J. B. Ford & Son, the extensive plate-glass makers of Pittsburg, have about completed negotiations for the erection of a large soda-ash manufactory at South Detroit. Their salt well is finished, and on analysis they find the salt free from gypsum and well adapted to their purpose. They do not intend to make glass, on account of the high cost of natural gas, which is piped, from Toledo, but inside of a year expect to give employment to 800 men.

The Berrien Springs Dispensary Co. is the name of a new concern incorporated last month. It is located in Berrien Springs, and has a capital of $50,000.

E. Heineman, of the Merz Capsule Co., has patented an improved form of gelatin capsule.

D. O. Haynes will hereafter combine the fascinating pursuit of pharmaceutical journalism with the prosaic but profitable duties of a bloated capitalist. He is one of the incorporators of the Detroit Tricycle Coach Company, Limited, and holds the office of treasurer. For that tired feeling he takes Hood's Sarsaparilla.

Prof. A. A. Clark, who died at Aiken, S. C., where he had gone for his health, was corresponding clerk of the State Board of Health, and the author of numerous papers on scientific subjects, especially those relating to sanitation. Two years ago he was offered the chair of English Literature at the Agricultural College, but refused it. He had just completed a novel dealing with economic questions at the time of his death, which will shortly be published.

The wife of Alderman James Vernor, the druggist, died of consumption on the 16th inst. The Detroit Pharmaceutical Society held a special meeting and unanimously adopted resolutions expressive of their sorrow and sympathy.

Jack Koch, proprietor of a brewery in Manchester, claims to be a cousin of the famous Dr. Robert Koch. Robert has not yet been heard from.

Farrand, Williams & Clark brought suit against Druggist Appleyard for $1,000. When the case came up for trial, however, it was announced that matters had been amicably adjusted, and the suit was therefore discontinued.

G. C. Ray, the First Ward druggist of West Bay City, mourns the loss of his father, William N. Ray, who died February 18th, after a prolonged illness of several months.

Some kindly disposed individual ought to present the advertising manager of Carter's Liver Pills with a copy of "English as she is wrote." Scarlet signs, with letters of white, everywhere inform the depraved victim of the constipation habit that

Carter's Little Liver Pills
cures
Sick Headache.

The twenty-first annual meeting of the **New Jersey Pharmaceutical Association** will be held in Masonic Temple, Trenton, on Wednesday and Thursday, May 27th and 28th, 1891. Mr. George T. Fitzgeorge is the local secretary, to whom all correspondence in reference to space for exhibits, etc., should be addressed.

Bridgeton, N. J., March 17th, 1891. Chas. F. Dare, Secretary.

MISSOURI

Kansas City.

DR. COCKLE is in the city from Hampton, Mo.

MR. PENCE, of Kearney, Mo., was with us on the 1st.

MR. SHEETS, of Smith & Sheets, Orrick, Mo., has paid us a visit.

H. F. HELLER, of Burlington, made us a business call. He is doing a big business.

J. R. SPENCER, Lee's Summit, Mo., made Kansas City a hurried visit on the 1st.

A. ROBERTSON, of McGrecen, Kan., was the guest of the wholesale trade this week and made many purchases.

C. S. CRAVENS, the local secretary of the Missouri Pharmaceutical Association, was over from Excelsior Springs for a few days this week.

F. C. FRITSCHE came down from Leavenworth a few days since, and was met by many old friends, and made many new ones.

G. A. DAWES was in the city last week on business. He owns a capacious store at Peculiar, Mo.

J. W. BRYANT owns one of the flourishing drug stores of Ness City, Kan. He paid our city a visit this month and added to his stock in trade.

P. S. ALLEN and J. N. BARNES, both of Liberty, Mo., have visited the city since the last issue of the AMERICAN DRUGGIST. They know where to come for new goods.

L. H. ELLEN, of Thayer, Mo., purchased goods in our city this month. Says business is opening again in his part of the State, and predicts a busy season this spring.

MR. SAULBERN, who has been retired from the drug business for some time, has again returned to his first love, and now owns one of the handsomest drug stores in Westport.

CLAUDE LOVE, the enterprising druggist of Westport, has received an appointment as postmaster of that city. Mr. Love removed from Belton, Mo., to Westport some eighteen months ago.

Our congratulations go to A. E. KRAUM, of Emporia, Kan. For years he has been a trusted clerk for Mr. Benj. Wheldon, but resigned on March 1st, and will soon be proprietor of a store in that city. He bought his outfit from Meyer Bros'. Drug Co.

MR. J. H. BERNARD, of Ness City, Kan., was in the metropolis this week, adding to his already large stock of drugs by new purchases. He is one druggist at least who says "times are not dull."

ERNEST GILLAM, class of '89, is at Buffalo, Wyoming. Thanks to the wide circulation of the AMERICAN DRUGGIST, through which our alumni found him. Later: A letter just received giving the address of Samuel G. Berry as Tecumseh, Neb. Doubly thanks.

GEO. H. HASHINGER, class '89, Kansas City College of Pharmacy, was married Wednesday, March 11th, at 2 P.M., to Miss Clara Jackson. The wedding took place at the residence of the bride's parents, Prospect and Rochester streets. The best wishes of the AMERICAN DRUGGIST are with the happy couple.

One of our most prominent druggists is under a deep suspicion that a valuable mineral spring has been discovered on his property south of the city. Prof. Claude C. Hamilton is investigating the character of the water, and says that a preliminary examination shows iron and magnesium sulphate abundantly. A quantitative analy sis will be made, when, if gratifying, the name of the fortunate pharmacist will come to light.

Many of our suburban druggists are receiving a nice little income from putting up the ingredients according to a formula sold by an industrious street peddler who is making the rounds of the city. This formula the gentleman warrants to make a soap that *contains neither lye nor grease!* The formula he sells is as follows: Sal soda, 1 pound; ammonium carbonate, 1 pound; and one bar of Lennox soap. Your correspondent is indebted to Mr. Harvey Maloney for the recipe.

The contest for the prizes in practical chemistry of the Kansas City College of Pharmacy was held in the chemical laboratory Friday evening, March 6th. The seniors were given potassium iodide, potassium chloride, and sodium bicarbonate to test for adulterations; the juniors were given lead nitrate, calcium hypochlorite, and barium chloride as "unknowns," and were required to give the chemical name, chemical formula, common name, and the official (Latin) name if official. The senior contestants were Edward M. Vanderpool, Otto W. Lowe, J. H. Miller, Miss Susie Halzinger, Harvey J. Maloney, E. R. Wichman, and Robert C. Cannon. The juniors were Joe L. Sewell, Frank A. Lowe, Miss Lottie Moses, Peter Buchert, Frank E. Bryant, James W. Hardacre. In the senior contest, Messrs. Vanderpool and Wichman were equal on the highest grades, and in the junior Messrs. Lowe, Buchert, and Hardacre were tied on highest grades, when Messrs. Buchert and Hardacre withdrew in favor of Mr. Lowe. So the junior prize in chemical laboratory goes to Mr. Frank A. Lowe, while Mr. Vanderpool and Mr. Wichman must contest again for the senior prize. The examination was conducted by Prof. Claude C. Hamilton, the demonstrator of chemistry. The professor has a unique way of grading the students, by which every candidate sums up his own grades in the presence of the other contestants.

St. Louis.

THE amended Missouri pharmacy bill has passed the House and will no doubt be through the Senate before this is in print. This is good news to all true friends of pharmaceutical progress.

If the new order of things in pharmacy laws is carried out the Board will be increased in size from three to five members. We hope it will be proportionally enhanced in value.

The passage of a pharmacy law in Arkansas has a good effect on the trade in this State, and all are glad to see it. Indiana is the next State to make the step forward.

It is queer, but nevertheless true, that the St. Louis College of Pharmacy is given credit for the effort to pass pharmacy laws in Indiana and Arkansas. This was held out by the opposers of the bills, who claimed that the College was trying to force druggists to attend it. It is needless to state the College authorities took no part in the work outside of Missouri, and even at home no official action was taken by the College. But here in Missouri no one even intimates that the pharmacy law is a College scheme.

At the recent annual meeting (sixteenth) of the Alumni Association of the St. Louis College of Pharmacy, the president, Dr. H. M. Whelpley, made a number of suggestions in his annual report calculated to promote the interests of the Association, such as: a bulletin board in the college for Association intelligence; a framed blank certificate of membership; a standing committee of five members to confer with students; the advocacy of a national organization of alumni associations; the making it the duty of the president to present the alumni prizes at the annual commencement exercises of the college; the contribution of $50 to the fund for purchasing a site for the new college building; the publication of a list of members in the college prospectus, and calling upon non-resident members to contribute papers and suggestions to be offered at the annual meetings.

The recording secretary, J. C. Falk, reported that the addition of twenty-three new members had increased the number to one hundred and thirty-three. The lectures by alumni to the students had been well appreciated, and notices of them had been sent to other alumni. The effort to raise an alumni fund to aid the college in the purchase of a building site is meeting with success.

Treasurer C. Gietner reported a balance of over $200.

The following elections were made: President, Prof. Francis Hemm; first vice-president, Dr. F. A. Temm; second vice-president, Henry J. Tritschler; recording secretary, Dr. J. C. Falk; corresponding secretary, Hy. L. Goodman; treasurer, Charles Gietner; registrar, O. F. Heitmeyer; members of the Executive Board to serve three years, Dr. H. M. Whelpley and J. W. Tomfohrde.

The Committee on Prizes reported a gold medal, to be presented to the best student in the graduating class, and

as having selected G. H. J. Andreas to deliver the alumni prizes at the graduating exercises.

Wm. C. Bolm resigned as a member of the Executive Board. C. M. Nicholson was elected to fill the vacancy.

The alumni fund will be turned over to the college as soon as the money is called for, accompanied by a list of donors.

BENJ. OTTO has an eye for the beautiful, even if he is not married, and his store, corner of Morgan and 28th streets, is one of the neatest in the city. Among other artistic things he has some fine white enamel letter window signs; but they do not look as fine as they once did, for a sneak thief carried off a few of them and left the signs in worse than phonetic spelling.

MR. BLIESNER is no longer with Temm on Franklin avenue. He does not believe in working in one place forever.

A. H. KLUTE lost $18 on a scamp who got him to cash a worthless check. Albert has had much experience in the ways of the world, and felt rather cheap over the affair, so much so that he spent considerable time and more good money to bring the fellow to justice as dispensed by the law. It will be some time before Albert is again caught asleep in his Easton avenue store.

New doctors have been matured by the half-dozen colleges of this city in greater profusion than ever before. One institution accepts a course in pharmacy as equivalent to one year in medicine, and thus turns out doctors after one year of study. At least a score of druggists are among the recent graduates of the various colleges.

Small-pox is in the city, and the City Hospital is not a good place to visit just at present. Fourteen cases have occurred in that institution.

F. W. SENNEWALD announces that the next meeting of the State Board of Pharmacy will be held at the Midland Hotel, Kansas City. He is secretary of the Board, and a hard worker for a retired pharmacist.

C. H. CHAS. KLIE says that he will go to New Orleans to attend the American Pharmaceutical Association meeting, and that he will go by river, even if he goes alone and is obliged to walk home. Whatever Klie says is to be depended upon.

FRED. WHITCOME, partner with M. W. Alexander, is off East for a few weeks' vacation. He has not been away for some time and the trip will do him good. Fred. is one of the most popular young druggists in the city.

M. W. ALEXANDER gives his popular store a renovation quite often. The work this spring will be more extensive than usual and result in a great improvement in the convenience and appearance of the place. It is one of the very best retail stores in the place.

H. R. LUYTIES has removed his store from 28th street and Washington avenue to 218 Pine street. This is quite a change of location, and demonstrates that a homœopathic pharmacy cannot thrive in the West End. All of the other stores are down-town.

H. J. MEYER has withdrawn his active interest in the Meyer Brothers' Drug Co. He will give his time and attention to other commercial lines in which he is interested.

Soda-Fountain Men Combine.

AN interesting trade combination was lately made public. A certificate of incorporation was filed in the office of the Secretary of State at Trenton, N. J., for the American Soda Fountain Company. The members of the company are John Matthews, of this city; James W. Tufts, of Boston; the A. D. Puffer & Sons Manufacturing Company, of Boston; and Charles Lippincott & Co., of Philadelphia. These are all old concerns. Mr. Matthews organized his business in 1832, Mr. Tufts in 1863, the Puffer Company in 1842, and the Lippincott Company in 1832. They control the business of the United States, Canada, and the West Indies. The capital stock is $3,750,000, of which 25,000 shares will be preferred. The value of property conveyed to the new company is stated to be $2,200,000, and the total sales by the individual companies during the four years preceding 1891 are rated at $10,152,151.66, with profits aggregating $419,402.39, equivalent to 17 per cent per annum.

GEORGIA.

ATLANTA, the progressive and wide-awake city, will have a full-fledged College of Pharmacy next season.

At the meeting of the stockholders of the new Citizens' Bank and Trust Co. of Thomasville, two well-known drug men who have left the ranks, J. W. Reid and J. T. Culpepper, were elected to fill important positions, Mr. Reid on the directory and Mr. Culpepper as cashier.

MRS. SHUPTRINE, wife of one of Savannah's leading druggists, has just undergone a most painful and dangerous operation for abscess of the inner ear. Present symptoms indicate a successful operation.

TURNER BROS., of Columbus, have secured the services of Waddell Rembert, who was with Mabbett & Jeeks, of Quitman.

W. C. RUSSELL, of Fleetwood & Russell, Americus, has so far recovered from his three months' illness as to be up and at business again, much to the gratification of his numerous friends.

W. C. FINCHER, late with Rowlinski's Pharmacy, in Savannah, owing to some misunderstanding has not yet gone into business for himself at Dalton, as recently announced, but expects to close the trade shortly.

Many inquiries have been made, and are being made daily, by our physicians for Koch's lymph, but so far only one in Georgia has succeeded in getting it. Our neighbors in Florida have been trying it, and with very favorable results.

J. T. ROCKWELL, of Brunswick, is very proud of his new store.

R. D. GRIGG, late with William Berlin, of Washington, D. C., has been offered and accepted a position with J. T. Thornton, Savannah.

Americus is now investigating the crematory business, with the view of putting up a five-thousand-dollar establishment.

At the commencement exercises of the Woman's Medical College of Atlanta seven diplomas were granted and nine certificates for trained nurses. This is the first institution of the kind in the South, and the prospects for the future are very encouraging.

DR. W. M. BYNE, of Albany, recently graduated at Louisville, Ky., has been looking up the possibilities of Cordele as a location.

CHAS. T. HIGGINS has been visiting in Brunswick, prospecting for a location for a large Southern soap factory.

Nearly $70,000 have already been subscribed for the new Grady Hospital in Atlanta.

The bill introduced before the last Legislature to prevent doctors and druggists from drinking did not get through. It was introduced by a physician, Dr. Baldwin, of Randolph, and proposed depriving them of the privilege of following their profession by taking away their licenses upon conviction of being intoxicated the second time.

CHICAGO.

A JURY in Judge Baker's court has just rendered a verdict of considerable interest to Chicago druggists and to physicians in general. Some three years ago a physician was called to attend a three-months-old baby which was suffering from an abscess of the ear. One of the items in the prescription which the doctor wrote was Tinct. opii pulv. The medicine was dispensed by a well-known pharmacist, and administered to the child, which shortly afterward died. To settle the matter arbitration was resorted to, and the doctor was assessed $1,200. He refused, however, to abide by the decision, hence the suit. He claimed in defence that the clerk who put up the medicine knew that it was a mistake and should not have allowed its use. The jury awarded the father of the child $500. The doctor has appealed.

The Internal Revenue Department has commenced a raid on druggists who deal in cigars. It is claimed that the boxes, in addition to the internal revenue stamp, are provided with stamps similar to those used on boxes containing imported cigars. This is considered a violation

of that section of the Revised Statutes which makes it a felony to use any stamp on cigar boxes in imitation of the custom-house stamps. A deputy collector visited the wholesale house of Fuller & Fuller Co. not long since, and seized 16,300 cigars. This firm has protested against the seizure, claiming that the stamps were merely guarantee labels.

The Illinois State Board of Pharmacy has instituted a form of practical examinations. They are conducted in Chicago by Messrs. Jamieson and Hogan, and can be taken by applicants at any time upon payment of fifteen dollars. Five dollars of this sum will be returned in case of failure. At present but a limited number can be accommodated, but as soon as arrangements can be made to furnish these examinations at the price designated by law (five dollars) all applicants for registration will be required to pass them. A general average of seventy-five per cent is required for a certificate as Licentiate in Pharmacy, and fifty per cent for one as Assistant Pharmacist.

MR. MAX RICHTER, 1800 Wabash avenue, died March 5th of Bright's disease. He had had possession of the store but a short time, having recently bought it of I. H. Fry, who took in exchange his old store on Cottage Grove avenue. It is understood that the business will be discontinued.

BUCK & RAYNER, who have been since the fire at 117 Clark street, are moving to their old store opposite the Court House. They thus secure a more desirable location and a reduction in rent of $2,000 a year.

GEO. F. WISSHACK has just signed the lease for the store at the northwest corner of Washington and La Salle streets. It is understood that Mr. Wisshack will have to give up his present store at Madison and Halsted streets about May 1st, when he will move to his new quarters, which will compare favorably with any other store downtown. Mr. Wisshack is a thorough druggist, and united with his knowledge of the business he has that "push," so characteristic of Chicago merchants, which assures success.

MR. T. W. WRIXON, of Evanston and Byron avenues, has recently sold his store to Charles Sutcliffe, city salesman for Fuller & Fuller Co. Mr. Sutcliffe will retain his position, and his brother Arthur will take charge of their new venture.

A. S. COWAN, of the Cowan-Bolmer Co., will shortly open a new store at Clark and Maple streets. Fred. C. Taylor, a druggist well known in that neighborhood, will be the manager.

SCHREIBER BROS., of South Evanston, have dissolved partnership, Theodore Schreiber continuing the business, while his brother has gone to San Diego, Cal., to reside.

MAX HEYDENREICH sailed for Europe not long since, intending to remain the balance of the season. He recently sold his store on West Randolph street to Martin Freiner.

MESSRS. ARTHUR DAWSON, T. A. COBB, J. W. SCHOFIELD, PETER VAN SCHAACK, S. A. HUMISTON, and R. H. VAN SCHAACK, representing the Chicago wholesale drug trade, accepted the hospitality of Parke, Davis & Co. last week, and made a tour of inspection through their laboratories. After a drive around the city and a visit to Windsor, Ont., they returned highly pleased with their trip.

It is rumored that a prominent druggist is negotiating for the store now occupied by the Rock Island Ticket Office, at the corner of Washington and Clark streets, in the Opera House building. An offer of $9,000 a year has been made.

A new corporation, the "Rosalie Drug Co.," has been formed to buy the store of Tonnar & Co. on Fifty-seventh street at South Park. Among the incorporators is J. R. Bennett, of Maris & Co.

A. F. WITHE, at present prescription clerk at Buck & Rayner's Clark street store, will open a pharmacy under the Leland Hotel about May 1st. His fixtures will be of oak and in the finest style.

Another new store will be opened shortly at Polk and Loomis streets by W. P. Brennan.

CHARLES KEHLER, for some years with Robert Stevenson & Co., has accepted a position as city salesman with Morrison, Plummer & Co.

J. M. Maris & Co. have discontinued their branch house here, and have moved back to Philadelphia.

LOUISVILLE.

THE commencement exercises of the Louisville College of Pharmacy were held on the 6th of March in Macauley's Theatre. The salutatory address was by Mr. O. W. Schmidt, of Indianapolis. Prof. O. C. Dilly spoke on behalf of the faculty. Dr. A. Muench delivered the alumni address, and Mr. G. D. Harger, of Texas, the valedictory. President R. J. Snyder conferred the degree of Ph.G. upon the twenty-one candidates, as follows: Henry Buckle, Kentucky; Adolph Butlekamp, Kentucky; Chas. A. Casperke, Kentucky; Wm. G. Dilly, Kentucky; D. G. Harger, Michigan; Louis Hertel, Kentucky; F. W. Hoffman, Kentucky; C. Kellar, Indiana; Charles F. Knolling, Indiana; Otto Kremer, Kentucky; Frank J. Lordier, Kentucky; Walter H. Meeke, Tennessee; Herman Metzner, Kentucky; Henry H. Machand, Kentucky; B. M. Overton, Kentucky; C. B. Peacock, Tennessee; Edward Reick, Indiana; Wm. Schanz, Kentucky; W. J. Wedekind, Kentucky; W. Wolf, Kentucky; and Robert Zehnle, Kentucky.

The following were the prize men: Highest general average (gold medal)—C. Kellar; II., C. A. Casperke; III., E. Reick. Highest averages in chemistry—B. M. Overton, C. A. Casperke, and W. H. Meeke. Laboratory honors—C. Kellar, E. Reick, and C. B. Peacock. Best examinations—H. Buckle, F. J. Lordier, and W. H. Meeke. Highest averages in materia medica—Messrs. Meeke, Buckle, and Overton. Honors in botany — Messrs. Casperke, Meeke, Reick, and Lordier.

The members of the junior class who passed their examination successfully, and who were granted certificates, are as follows: M. D. Averill, Kentucky; Wm. Birk, Indiana; R. W. Bottomly, Kentucky; Guy Burton, Mississippi; Miss Alice Churchill, Texas; G. F. Curry, Kentucky; H. F. Cohen, Kentucky; Frank H. Dorsey, Indiana; Chas. Drew, Kentucky; W. O. Hartman, Kentucky; H. Kampfmueller, Kentucky; W. P. Klapp, Arkansas; S. D. Luten, Kentucky; H. F. Lutkemine, Kentucky; G. O. Patterson, Kentucky; Kamer Philpot, Texas; J. G. Reinhardt, Kentucky; Geo. C. Reis, Kentucky; L. W. Rispue, Kentucky; F. M. Scales, Indiana; Oscar W. Schmidt, Indiana; Harry Streuber, Pennsylvania; and T. C. Zimmerman, Kentucky. Several members of the class received honorable mention for their good averages. Messrs Conrad Kellar of Indiana, B. M. Overton of Kentucky, W. H. Meeke of Texas, Henry Buckle of Kentucky, K. Philpot of Texas, and M. D. Averill of Kentucky received medals for proficiency in the various branches.

Miss Churchill was awarded a gold medal in honor of her being the only lady who ever passed a successful examination at the college.

College of Pharmacy of the City of New York.—The Annual Meeting of the College was held on Thursday, March 19th. The following officers were elected: *President*, Samuel W. Fairchild. *Vice-Presidents*, I, William Massey; II. W. L Vennard; III, Charles Holzhauer; *Treasurer*, H. N. Fraser; *Secretary*, J. N. Hegeman; *Trustees to serve for three years*, H. W. Atwood, B. F. Hays, T. J. MacMahon, Charles Rice, Geo. B. Wray.

After the election, brief addresses were made by the professors of the College. Prof. P. W. Bedford, in the course of his remarks, expressed his regret that, owing to the increased demand for time and personal attendance rendered necessary by the present plans of lectures, and his other engagements, he had felt compelled to tender his resignation. The President subsequently introduced his future successor, Dr. Virgil Coblenz, who briefly addressed the meeting. Prof. Coblenz, for the present, will return to Europe, where he has pursued a special course of study during the last few years, and will assume his new duties at the close of the summer vacation.